A backissue which talks about the Z80MU CP/M emulator program for the IBM PC, probably a little less knowledgeably than I would talk about it now. This is a newsletter that never really got off the ground.

The Avocational Computer Users' Guide

--------------- Amateur Computer Use, On the side-MS DOS, etc. ISSUE #1-BC-1990

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—8 pages

This trial start-up newsletter is aimed at those wishing to do a little hobby computer work, learning, programming or just fooling around with one of the business styled computers like the IBM compatibles or Apple Mac, on the side, in the sense that it is aside from normal work use of the computer. Here is our first, trial issue:

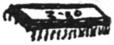
After covering the hobby use of computers using low cost computers, for a few years, using the medium of amateur publishing of newsletters for orphan computers, it seems **time to join the** computer user groups that were once based on orphan, 8-bit computers (like the Commodore 64 and Radio Shack TRS-80, Sinclair and Timex), **as they move** out into the coverage of the 'big' computers like the MS DOS ones. Since this field is already well covered by the glossy magazines from the commercial angle, this newsletter will cover it from the non-commercially profitable angle, that is enjoying the computing hobby on a shoe-string budget. Low cost computing is hitting the MS DOS world today even as far as hardware goes, with IBM PC/XT clones selling for very low prices and even 386SX clones for under $2000 here (in Ottawa). It looks like a time for a shake-out, the way the low-cost computers of five-seven years ago were squeezed by lower prices putting a squeeze on dealer, wholesaler and manufacturer profits all the way down the line. We are tuning into this at a very interesting time in the MS DOS industry, one full of perils for the marketers and full of bargain opportunities, quite possibly, for the home consumer. **Once orphan computers ~~were~~ too pricey and only became accessible to the mass of hobbyists after price slashing. History is repeating with the PC.**

$$ Money Saving Tip: Don't throw away disks that are returning error messages. The drive itself may be faulty, misaligned as to azimuth or just dirty, and the disks may be quite okay, although in some cases they may have to be erased. And don't throw away the diskettes for old, orphan computers. Format programs and system fiddling can often reformat and allow reuse of even single-sided diskettes, or double-density diskettes, used, in a high density drive in the less dense, double-density mode and storage capacity, by similar means. A fair amount of fiddling may have to be done and thumbing through technical manuals (or consulting with user group members), but using a bulk eraser (for cassette or VCR tapes) on the old diskettes before formating them in the MS DOS computer may help you to reuse a lot of otherwise wasted and expensive-to-replace disks.

Running CP/M

Yes you can run CP/M on your IBM compatible computer. Rather than start trying to find a CP/M, Z-80 board for your computer, simply using a public domain or shareware program (like Z80MU, available through Computer Parts Galore, 316 College St., Toronto, Ont., Canada), may be all you need or if you wish to optimize performance (speed) and your computer has a V-20 rather than an 8088, an emulator that makes use of that computer's 8080 m/c compatibility is also available from the same firm mentioned above. CP/M software including a Pascal compiler, BASIC compiler and many games and utilities, are available on MS DOS format disks, from PD User Gp., Box 1442, Orangepark, FL, USA 32067. Many BBS systems also have CP/M shareware and public domain programs that can be downloaded (avoiding the problem of disk format incompatibility that way). The most important user group for CP/M (with a CP/M interest newsletter as well as an MS DOS one) is FOG, First Osborne Group, P.O.B. 3474, Daly City, CA, USA 94015-0474. Many orphan computers can run CP/M using software emulators (and many can also run MS DOS using software emulators). Sinclair QL's can run both if you buy the respective software emulators (and have a disk system like the Trump card, with extra memory). American Micro Connection, 2175 Aborn Rd., #262, San Jose, CA, USA 95121 has stocked both emulators for the QL. The Apple Mac will run **either** using an emulator as will the Atari ST. Apple II's of course will run CP/M with a hardware card as old Apple hands know. CP/M may run more slowly with these software emulators (than on the computers designed for CP/M) but they offer a world of public domain software cheap or free as well as the possibility to run expensive software discarded by users of CP/M computers when they junk the computer.

What's A Microprocessor Made Of?



What's a microprocessor made of? You hear people say that a certain microprocessor (like the 8086) has 10,000 transistors inside it, but how to visualize that? A microprocessor or any other VLSI silicon chip (VLSI- very large scale integration, the high density chip used for modern microprocessors) is basically a tiny printed circuit board (say ¼ inch square to ½ inch sqaure), in which the transistors are connected, usually by a metal connection grid or layer, right on the silicon chip on which they were formed.

How did anyone think of this? Well, transistors were once made one at a time (and were originally, in the 1950's very expensive, so much so that the $200 and $500 transistors were packaged in jewelry boxes like a wedding ring). The process developed so that they could be made on a wafer of silicon and next step was discovering they could by a process of a number of steps be formed on the silicon wafer, not one at a time, but a bunch at a time. The silicon wafer was then cut into little squares, one transistor per square. Doing the transistors, say 200 at a time, saved a lot of money for each time you went through the dozen or so steps of making one wafer of transistors, you could end up with 200 rather than one. A little later it occured to people that you need not cut all the transistors apart on the silicon wafer, but could leave say 4 or 6 per wafer and join them up in a little amplifying or digital circuit by forming little resistors and metallic connections (equivalent to wires) right on the surface of the wafer after the transistors were formed (or in some cases as part of the same process). Then when you cut apart the chips, instead of having 200 single transistors, you would have say 40 silicon chips with 5 transistors each and the circuitry linking them to form a little amplifier or flipflop.

A VLSI chip is one of the results of developing techniques to fit as many transistors in as small a space as possible on the silicon chip integrated circuit. 10,000 transistors is a typical figure. Microprocessors which are in effect most of the central processing unit (CPU) of a small computer, are very complicated circuits that need therefore a many-transistor circuit, and were one of the most powerful applications of this silicon chip integrated circuit technology. Before that, the CPU of a computer would come on a printed circuit board, that would be one of many to plug into a computer mainframe (mechanical and electrical printed circuit board housing). Before any integrated circuits were used in computers, in the days of single transistors, the CPU would of course be made up of a number of printed circuit boards, plugged in to the computer unit. So a microprocessor is a printed circuit board in which the circuit is that(of most of the components, less memory - RAM and ROM memory) of a computer CPU. The earliest microprocessors were not dense enough to qualify as VLSI density, but with the Z-80 and 8088 and so on, VLSI became the standard for microprocessor complexity. It is amazing to see the outline of this micro 'printed circuit board' when you put a silicon chip under the microscope, as you would a fly's eye or a feather. That makes you realize, how microminiaturized an integrated circuit is compared to the regular printed circuit board.

In the attempt to get as many transistors as possible on a silicon chip, a relatively new type of transistor at the time (1970's), was starting to be used more and more, especially for VLSI chips and their predecessor the LSI (less dense, Large Scale Integration) silicon chip. This was the MOSFET, or metal oxide silicon field effect transistor. This was simple to construct on a silicon wafer and smaller. Taking up less space per transistor on the chip, it allowed much denser packing and was used in the LSI and VLSI chips when they were first made. The MOSFET is a different kind of transistor than the originally invented transistor (of the transistor radios of the 1960's to 1970's). The original transistor was the NPN or PNP type (both were used, the difference is mainly in the electrical polarity of the connections, the PNP taking a negative collector, the NPN a positive collector connection). They are still used today both as separate transistors (discrete transistors in the engineer's jargon) and as the transistors inside some integrated circuits (actually many integrated circuits). The MOSFET transistors, come in two genders also, n-channel and p-channel, similar to the NPN and PNP transistor distinction, and they are used as the transistors inside virtually all microprocessors including CMOS ones.

Z80MU (Cont.-end)

Software emulators were at the time of their introduction for CP/M a way of smoothing the bridging from CP/M files, data and programs to MS DOS. In 1982, when MS DOS was introduced, little software for it was available and anyone using a microcomputer before its introduction would have had to have it converted into MS DCS files and disks. A few computers like the Kaypro* and DEC Rainbow had both MS DOS and CP/M hardware built in. But as the MS DOS star ascended, the CP/M star gardually faded. Now CP/M is mainly of interest to those with 8-bit computers who want a good disk operating system suited to the more limited memory addressing capability of 8-bit microprocessors and who cannot get MS DOS. The Z-80 and even 8080/8085 based 8-bit computers run CP/M fairly fast. The 6502 family computers like the Apple II and Commodore 128, less well, and the 68000 based computers like the Atari ST and Sinclair QL, somewhere in between. But at least it allows those computers to get out of the more limited world of software designed only for that specific make and model, into the more general world of CP/M public domain and serious commercial applications, even if they are starting to look a little dated from the perspective of the 1990's. **More to the point in today's world, CP/M even if run via an emulator in both the source and target computers can enable those with incompatible computers to swap programs, a PC clone owner writing one for say an Atari.**

*** One model of Kaypro anyway after the exclusively CP/M ones and before the MS DOS only models.**

Software Emulators to Run CP/M on an MS DOS computer:

Z80MU (public domain) - Also see Byte Magazine article,

V-MU prog. (requires an MS DOS computer with a V-20 microprocessor rather than the standard 8088 or 8086, or even 80286).

Also some Commercial emulators - see Byte Magazine article,

Emulators for Other Computers

Z-80 Board for Apple II plus and Apple IIe computers. (Hardware emulation)

Z-80, CP/M Cartridge by Commodore Computers for Commodore 64

Software emulators for the Trump Card disk interface equipped Sinclair QL are available from many suppliers altho getting harder to get. E.g. American Micro Connection, 2175 Aborn Rd.,#262, San Jose, Calif., USA 95121 (408) 270-9730

Software etc.----- for the Zebra or Aerco disk equipped Timex-Sinclair TS2068

Atari ST- public domain software emulator avail. -Mr. Diskette & via writer

CP/M for the disk equipped Radio Shack, TRS-80 Models I and III and 4, available through suppliers like: TriSoft, 1825 East 38½, Austin, TX, USA 78722 (1-800-531-5170-/usa) ,or Montezuma Micro,2544 W. Commerce St., Dallas, TX 75212

CP/M for Coleco Adam, Contact your local user group.

Dual Mode Computers With Built-In CP/M In One Mode

DEC Rainbow ---- Commodore 128 ---- ~~Apple IIc (X)~~ --- Some Kaypros

CP/M Software (Software That Will Run Under CP/M)

Major Manufacturers:
- Borland still sells Turbo Pascal for CP/M,
- Microsoft still sells CP/M programs
- Wordstar is also avialable
- dBase II the predecessor of dBase III, Ashton-Tate
- some of the older spreadsheets are also available
- BASIC compilers like CBASIC and EBASIC, still avail. new

Public Domain/Shareware/Utilities:
- SQ, archiving utility, NSWP, ARC etc.
- C compiler, ALGOL, FORTH, compilers too
- assemblers/ disassemblers (Z-80/8080)
- Pascal Compiler
- public domain BASIC compilers/interpreters

from suppliers like:

PD User Group, Box 1442, Orangepark, FL, USA 32067 (available most CP/M disk formats & MS DOS disk formats, double-density).

Other Operating Systems And Interfaces for MS DOS (A Curious Compendium)

Note suppliers of low cost MS DOS software have made improved interfaces for MS DOS computers if the standard, MS DOS 'command line' (A> then type in some cryptic slice of MS DOS operating system command language) baffles or annoys you. Some make your IBM clone into a mouse driven Macintosh or Atari ST work-a-like. Others just give you menu choice format to work with, moving the cursor up and down with the arrow keys perhaps, to select your choice in programs off the disk. Still others try to make your little PC clone look like the screen of a VAX running VMS, a UNIX computer/workstation or something still fancier.

Where to look for them: (Note: all prices are guesses, US$, del'd USA).

Interface simplifiers:
- public domain and shareware like the Still River Shell and DOS shells from low cost mass market companies like Spinnaker, which sells through Radio-Shack stores. -many wordproc. etc. have simple shells
- commercial programs like QDOS II, and other hard disk oriented managers, shells, Norton Commander, and etc.
- GEM Desktop/EZ DOS $100-200 or so **(Digital Research)**
- **GEOS-like o/s about to be released by the GEOS people**

Interface Imitators:
- VMS shell imitator (VAX imitator)) by Wendin Sys.
- UNIX shell imitator -"PCNX" -$140) see also Austin Cd.W.

Full-Blown, scaled down clones of the UNIX operating system, ready to compile with MS C compiler, source code from Austin Code Works, 11100 Leafwood Lane, Austin, TX, USA 78750-3409
- XINU - described as a toy (see "Operating System Design The XINU Approach", by D. Comer, Prentice-Hall, 1984), $35 (for programs)
- MINIX, described as a learning tool, and supported by some USA user groups like SLIX, c/o 6675 Clifford Dr., Cupertino, Calif., USA 95014-4530, and many technical books, doc. files, $105
- OS-88, a more fully featured, UNIX style O/S, source code $150 (from Austin Code Wks.)

Commercial Operating Systems for Multi-Tasking Computers (80286, At compatible, or 80386 computers as the case may be) Mark Williams Co.
- **Coherent (Unix clone) needs 80286 & HD, US$100 (spec, until July) 1-800-627-5967**
- OS/2 by MicroSoft, touted as the successor to MS DOS for the expensive computers that can handle it, hard disk, 80286, At compatible, 2Meg RAM **(~$1,000+)**
- SCO XENIX, also sold through Radio Shack at one time, about $1500
- Wendin DOS (not to be confused with above-mentioned Wendin products) $160
- PC MOS 386 , about $200
- Concurrent DOS 386, about $400
- QNX, available for VAX, IBM AT etc. **(from $500, up)**
- **Flex OS 386 by Digital Research (GEM mfg.)**

Operating System Extensions to Allow Multi-Tasking or Other Features With MS DOS
- MS Windows (needs AT compatible, just about) about $100, also 386 ver.
- DesqView (an accessory that allows multi-tasking) about $160
- DOS-A-MATIC - shareware ($5 plus fee for registration)
- Software Carousel, (a simple program that allows access to more than one program in your computer at a time) - about $100
- Double DOS (a program that allows two functions to run on the computer) about $80

Roll-Your-Own Operating Systems
- source code in C language for MINIX, XINU, and OS/88, from Austin Code Works, mentioned above, (see above)
- operating system creation tool kit from Wendin Sys. , about $140
- various tools and source code kits sold through many suppliers including compiler manufactuers like Borland, Lattice, and those cattering to the professional C language programmer or consultant
- the amateur programmer/hacker, perhaps you or me, who wants to make a new feature or command language, in BASIC of all languages, to have the look and feel of another computer or system, real or imaginary and is working only from the GW BASIC or BASICA that ame with the PC

(Simply) MS DOS Alternatives: Dr. DOS, MS DOS clone; CP/M 86 - IBM PC adaptation of CP/M

Z80MU CP/M Emulator For IBM Compatible Computers (MS DOS)

This is a very fine software emulator which needs no special hardware to run CP/M programs (in 8080/Z-80 machine language when compiled and that may use CP/M systems calls). It was written in the C language for a company that was making the transition from CP/M program development to MS DOS and missed some of the facilities available for development/debugging in CP/M. It turned out to be too good to keep to themselves, so they generously placed it in the public domain.

8088/8086 machine language is not compatible with 8080/8085 or Z-80 machine language, although programs written in 8080/8085/Z-80 assembly language are fairly easily rewritten to run in 8088/8086 machine language after being put through an 8088/8086 assembler (like A86 or MSASM). However there is a microprocessor, the V-20 which is 8088/8086 compatible (and will plug in, in place of the 8088, or the V-30 in place of the 8086) and which will handle 8088 (but not Z-80's extended) instruction set. It does that after being switched into 8080 m/c receptive mode by a special m/c instruction, BRKEM (0F FF cc) which tells the V-20 to start executing 8080 m/c (starting so 8-bit immediate number cc, works the same way as the 8088/8086 INT cc). [The address execution is calculated relative to Reg. CS and data addresses relative to DS. Normally this call will load cc into CS and DS at the same time, on execution.] 8080 registers A, B, C, D, E, H, L are supported and SP and PC too (PC=IP, SP=BP). 8085 mode is not supported. While in this 8080 mode, the instruction RETEM (ED FD) will return to execute the instruction in 8088 mode where it left off. Other instructions like CALLN, IRET, allow subroutines and interrupt handling in the mode that the microprocessor has left.

All this amounts to two things: The 8088/8086/80286/80386 family is not m/c compatible with the CP/M 8080 instructions set (or 8085 or Z-80, even less), so that you need a software emulation program to handle programs compiled to 8080/Z-80 m/c under CP/M or a hardware board with a real 8080 or 8085 or Z-80 on it and a lot of interface circuitry. Second, there is a better way to do CP/M emulation if your computer has a V-20 instead of the 8088 as its microprocessor and often just unplugging the 8088 and plugging in the V-20 is all the modification necessary. With a V-20, simpler emulation (and faster) could be performed with a software emulator and indeed one for use with V-20 equipped IBM PC compatible computers is available.

How to use the Z80MU emulator? Just put the compiled emulator program on your hard or floppy disk after starting up the computer with MS DOS (booting the MS DOS in other words) and at the MS DOS prompt, type Z80MU. Then the prompt for MS DOS (say C>)*goes away and you have the Z-80 C> prompt and can type in your program to execute, like the CP/M program CBASIC or MYPROG.COM and the computer will start to run it. If it bombs, you may find yourself back in MS DOS mode and have to type in Z80MU at the MS DOS prompt all over again, but that is just about the worst that can happen.

You do not get emulation of the CP/M system tools, STAT, ED (text editor), or DDT (assembler, m/c monitor). On the other hand you can use a mix of CP/M and MS DOS utilities, so that CHKDSK can be used instead of STAT, EDLIN instead of ED and for DDT, well, you will have to look for a Z-80/8080 assembler somewhere. With MS DOS COMMAND.COM on the disk COPY (vs. PIP), TYPE, DIR are available.

That brings up the question of disks. A DIR command will give you a directory of files and programs on your MS DOS disk, but how do you get data or programs off CP/M disks? That could be quite a problem. There are many CP/M disk formats for 5¼ inch disks, as after the standards for 8 inch disks were set in stone so to speak, the arrival of the 5¼ disk saw CP/M disk standards disolve into anarchy. The Z80MU program does not help here. It is furnished usually on a standard MS DOS format disk like the 5¼ inch, 360K double-sided one. To get CP/M files or programs into your computer, from which point they can be saved in MS DOS format on your hard disk, 5¼ floppy or even 3½ inch floppy you must use another method. Some CP/M program suppliers will supply shareware, etc. for CP/M on MS DOS format disks. PD User Group, Box 1442, Orangepark, FL, 32067 is one company that will. The other cheap alternative is to download the programs from a BBS catering to CP/M, just using your ordinary MS DOS modem program and save them for your own use on an MS DOS floppy. Otherwise you will have to buy a commercial program to read CP/M formats of disk on your IBM PC.

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*Some CP/M programs won't recognize drives other than A: and B: however.

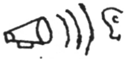
There are some commercial programs to read a 5¼ inch CP/M disk on an MS DOS computer with a 5¼ inch drive. There are many CP/M disk formats, so you should know which you are trying to read and make sure you are buying the a disk reading utility with the right features to do it. Once you have the program read into the computer it can be written on a normal MS DOS floppy or hard disk. Of course if you have only a high density 5¼ inch drive (as with some AT compatibles), it might be longer odds to bet that the disk conversion utility would work with it unless it had been adapted to work with a high density drive (more than 1 megabyte). As for 3½ inch disk drives, if that is all you have, then no 5¼ inch CP/M disk will even fit in it. Once you get the CP/M program on an MS DOS disk, it can be copied with the MS DOS copy command and the whole disk copied with the MS DOS diskcopy command (which won't copy CP/M format disks). Public domain programs exist for reading MS DOS disks* on a CP/M computer, but as far as the writer knows, none for reading a CP/M disk with an MS DOS computer. On the other hand, for occasional use, a disk rescue utility for MS DOS might be good enough to let you examine or transfer sector by sector, a file of a CP/M disk, to MS DOS. On a CP/M disk, typically the first two tracks are used for the bootroutine and BDOS directory info and the other tracks for the user's programs and data, in typically 256 bit sectors. ASCII is used for text files as in MS DOS, although TAB is often used and CR plus LF rather than just CR for a line termination. EOF is the same as MS DOS. **However, the writer did find a compiler that would not read source code unless an even number of 128 byte multiples made up the file with the left over filled with 1A hex.**

The real penalty of using a software emulator over a hardware one is in program execution speed. Z80MU has a little indicator in it that will tell you that the CP/M programs will execute on your MS DOS computer as fast as on a CP/M computer with a Z-80 running at a certain clock speed. On my Tandy 1000A, that runs at 4.77 MHZ and has a Norton SI of 0.89 (IBM PC equals, 1.0), it gives ¼ MHZ as the equivalent Z-80 clock speed. This is not as bad as it might seem when you compare it to CP/M running with the Commodore 64 or Apple II hardware emulators at 1 MHZ (to mesh with the 1 MHZ 6502/6510 clock speed microprocessors that coprocess with their Z-80's in the hardware emulators). But it is not exactly fast. With even cheap XT clones running clock speeds of 12 MHZ now, you would expect the average computer to double that performance in Turbo mode.

All this raises another question? Where do the wasted clock cycles go with a software emulator? A rough guestimate would indicate that the software emulator turns each Z-80 clock cycle worth of processing into 20 of the 8088 clock cycles or a 1:10 or 1:20 proportion, so that each Z-80 instruction is interpreted by means of the execution of 10 or 20 8088 m/c instructions. Of course the cycle stealing, instruction fetch queuing of the 8088 makes such direct comparissons impossible, but it gives us a clue as to what is going on inside the software as it runs your CP/M compiled program.

What CP/M software is worth running anyway? dBase II is expensive in CP/M as well as its later equivalent in MS DOS dBase III Plus. Ditto for Wordstar. There are possibly some bargains in compilers, but not all that much gain. Some of the compliers like CBASIC are really lean and mean code generators compared to the flabbier MS DOS products, since they had to cope with smaller (45-64K) CP/M RAM sizes, and so are designed to compile into smaller executable files. But on the other hand, they lack many features we have come to depend on in MS DOS languages. Some CP/M compilers have been turned over to the public domain but then so have some MS DOS ones, or if not public domain are available to take a quick look see at, as shareware. Mystic Pascal for MS DOS is shareware. Mix Power C (derived it is said from Z-80, Alcor C), is selling for MS DOS at shareware price range (about $29). There are a lot of public domain games however. And the pleasure of having a look see at an earlier sytle of program and operating system at little cost is the reward for dabbling in the use of CP/M with Z80MU. An MS DOS user will be surprised at how easy (and how similar) CP/M commands are to MS DOS and should have no trouble doing the little things with it, without having to read a lot of complicated reference books. To get into the nitty gritty of CP/M is another story, but here the documentation file for Z80 MU will help explain many technicalities. CP/M is the granddaddy of MS DOS and its inspiration in a lot of ways, so trying CP/M with an emulator is a little bit of pleasurable timetravel, back in home computer history if nothing more.

* PCPIP reads MS DOS disks. PDHG has it.



Macintosh computing is more and more moving into a niche market, where dBASE MAC use for file systems, MS Word for wordprocessing and Hypercard applications rule. While the first two, other than for the icon based interface are conventional applications, hypercard concepts are very poorly developed as yet in the PC compatible world. The PC compatible world moreover is suffering an identity crisis, not knowing whether to grow up, into the big computer mold world of OS/2 or to stay in the adolescent, MS DOS world, with all the toy utilities that are in it to make life more agreeable. The Mac world seems now positioned in a market that is made up of managers and other office workers too busy getting a job done with it to worry about how it or any other computer or applications package might work. The untapped (and less commercial market) of the users that turn the computer on in the basement, after the work of the day has been put to bed, is the portion containing the user base that we seek to address. Yes, there are public domain and shareware programs out there for the Macintosh. One source is the 'Almost Free' software advertised in Computing Now, by Moorshead Publications, 1300 Don Mills Rd., Toronto, Ont., Canada M3B 3M8 (416)445-5600 (voice). D:M "MacLand", Box 1646, Orangepark, FL,USA 32067-1646. Even Ezra-Ezra will send little clippings of Macintosh programs (as well as for most other computers), from Box 52222, San Diego ,CA,USA92105 (he is also a contributor of articles to Byte magazine on occasion). And then there are the local user groups and their disk collections, to share (in Ottawa via Mr. Diskette stores). But for all its user friendliness, the Mac has not spawned a lot of public domain or shareware programs, unlike the MS DOS world or CP/M.

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Atari ST- new Atari ST models are coming out onto the market as this is being written. Public domain and shareware programs for the ST's are not all that common, although the user groups and a few magazines have diskettes of them. Some programs are coming from Britain and Europe, where the ST has a great following among hobbyists, some of whom are writing interesting programs for it. Locally (Ottawa), a local dealer has been modifying and doing other programming work for customers to get them workable programs adapted to their own specific uses. Again, Mr. Diskette carries public domain disks from the local user group's collection.

NeXT-This new computer from Steve Jobs, formerly the energy behind the founding of Apple Computers, has been sold to a few commercial firms and is trying that way to build a base of commercial users, rather than just target the computer at the university student, yuppie/preppie crowd. Interestingly enough, Atari may honour the NeXT, with a work-alike copy, much as the Atari ST, is a work-alike version of the Apple Mac. Although the NeXT computer has been on the market for about a year now and its innards written up in technical narrative in Byte magazine and others, this computer is now going through the waiting period that seems typical for all new software platforms, during which we will just have to wait and see if it catches on and the amount of software available for it reaches a critical size. The NeXT has been designed to give really rich digital sound and VCR-like graphics, using the 68000 family microprocessor and a CD ROM for program/data input.

Foreign Language Press: Die Illustrierte, "Hobby", hat gewöhnlich ein oder zwei Artikels für Computerhobby, sondern keine Quellprogrammen und keine Spezial für diese oder jener Mikrocomputer. Technische Berichten bestimmt auf dem laufenden ist die 'forte' von "Hobby" und die Artikels sind leicht zu lesen.

Les magazines pour les amateurs d'ordinateur français sont intéressants, parce que les programmes sources sont plus souvent dans Pascal que dans BASIC. Pour cette raison, les magazines comme "Microsystemes", sont un bon resource pour les programmeurs qui préfèrent Pascal. Au delà quelques articles dans les petits cahiers du Turbo User Group, aidé par la compagnie Borland soi-même, il y a un manque dans ce domaine en anglais. Les programmeurs professionels preferent C si ils daignent de utiliser un language du troisième génération (en contredistinction au les outils de genie du logiciel, -CASE-). Les bricoleurs dans le domaine de programmation de ce bord d'atlantique et de génération MS DOS (depuis le démise de CP/M — la côterie CP/M a eu un affection pour Turbo Pascal), preferent BASIC avec, en cas d'un ralentissement intolérable de execution de programme, un peu de langage machine. Il y a une situation bien heureuse pour nous qui habitent Ottawa, que les magazines en français sont disponible assez facilement. C'est intéresant à échantillonner les articles d'outre-mer, ciblé aux amateur d'ordinateur.

Magazines of Interest (as at May, 1990)

(Vulcan's) Computer Buyer's Guide was born of a disagreement on coverage and policy between some of the enthusiasts and veteran computer hands at Computer Shopper, and the magazine's new owners, Ziff-Davis. Now, the writer can sympathize, for while Ziff-Davis produces some very fine magazines, including computer magazines, like the DEC product oriented glossy and a number of mass market magazines (like Psychology Today), nobody, however, has ever accused them of being enthusiasts or fanatics before being businessmen. The result, is that when Ziff-Davis started re-organizing the Computer Shopper and integrating the writing and columns with some of its other publications of a computer nature, dissidents broke off and formed the nucleus of Vulcan's Computer Buyer's Guide. The break-away magazine looks similar in format to the older magazine but is thinner (and sells for $1 less, in Can. prices). It also continues the coverage of smaller markets like the orphan computers and computer user groups, as well as the Mac and IBM PC-compatible market. We shall wish it well, as there can not be too much competition and too much variety in the computer hobby support field. Computer Shopper no longer covers orphans like the Sinclair, TI, Color Computer or even Comodore 64.

Macintosh Hands On magazine has been dumped, or to use the words of its managment, been pruned, from the organization's line up, the same organization of enthusiasts that brought you the Apple II magazine, "Nibble" (still going). The reaoning is interesting to read as the publisher says. "the Mac market was moving up, up and away. As the market moved, the characteristics of the users changed." And in short, the users changed from the enthusiasts and hobbyists that Nibble built it's approach on, to business users, not interested in playing with their computers but in doing the job with them. That seems like a fair appraisal of the evolution of the Macintosh market, although it does neglect the many students and other home users, who with a Mac at home, bought for business purposes (perhaps since it is the same computer as used at dad's work, or mom's), now find they want to play with it. How much coverage this newsletter can offer or will find practical to offer of the Macintosh market (or even the related Atari ST market, since the Atari ST works much like the Macintosh, with picture based interface and mouse), remains open at this time. The publisher of "Macintsoh Hands On" decided to concentrate his small company's scarce resources on the developing, IBM PC compatible market, which seemed to be growing in popularity among the software tinkerers and computer enthusiasts, who are moving up to IBM PC clones (and AT), as their prices starts to drop down towards that of the orphan computers that they started home computing with.

PC Hands On is a result of pursuing the enthusiast or computer fan, as many switch from orphans to the PC clones. It was started in October, 1989 and is aimed at the IBM compatible owner who likes to program his computer or learn programming, in GW BASIC, BASICA or Quick BASIC and perhaps also in assembly language. A current series of articles is also introducing the C language, but that is not a major focus of the magazine. BASIC and assembly language are. One of the writers, Thomas Woods, once was involved in publishing a newsletter style magazine for the Timex-Sinclair orphan, and support from the publisher's Nibble, Apple II writers/editors is also apparent in the style of the magazine which features listings of BASIC programs. General articles at the semi-technical level, that appreciated by the hobbyist or technically inclined beginner, on more general topics than programming are also included to round out the content. One of the few magazines to address the needs of the hobby programmer, this one is a winner.

PCM (The Premier Computer Magazine), which addresses itself to the Tandy 1000 owner, also includes a great deal of material of use to the amateur programmer of any IBM clone, and it also includes several BASIC programs per issue fully listed. Not seen too often on the newstand, the publishers may be contacted at: Box 385, Prospect, Ky, USA 40059. Another valuable source for the amateur programmer, seen mainly in computer stores, WH Smith's and (a store copy) at many Radio Shack stores.

BILL HARMER
97 Ruskin Avenue
Ottawa, Ontario